

developing

developing ecosystem approaches to fisheries



Ecosystem-based management is one of the hottest topics being considered by fishery policy makers today. While building on existing mechanisms, this new paradigm is a significant enough departure from past approaches to spark debate and spearhead new initiatives.

For the last century, fisheries managers have generally focused on single-species management, limiting fish removals to ensure sustainable catches of those species. Fishing can have substantial impacts on the marine environment by altering benthic habitat, food webs, and the diversity of marine communities. An ecosystem approach considers interactions between physical, biological and human components of the ecosystem, while ensuring the overall health of each component, including the sustainability of managed species.

An initial but concrete step was taken in 1996 when the Sustainable Fisheries Act required regional fishery management councils and NOAA Fisheries Service to broaden management considerations to account for bycatch (fish that are caught but not kept), habitat protection, and improved monitoring and research.

The Act also established an Ecosystems Principles Advisory Panel. The panel, representing a range of interests, was charged to review the extent to which ecosystem principles are currently incorporated into fishery management and research and recommend activities that would better integrate ecosystem principles into current programs. In addition to recommending comprehensive policies and goals for fishery management, the Advisory Panel supported the development of Fishery Ecosystem Plans and research to support them.

Ecosystem interactions are currently considered in many fishery management actions, and several councils are developing fishery management plans that explicitly reconcile the potential effects of fishing on ecosystem components. For example, the Western Pacific Fishery Management Council began work on the first-ever federal ecosystem-based fishery management plan in 1995, resulting in a Coral Reef Plan that encompasses over 6,000 square miles of habitat around U.S. Pacific Island areas.

An ecosystem approach to fisheries management is:

- **Adaptive**
- **Specified geographically**
- **Takes into account ecosystem knowledge and uncertainties**
- **Considers multiple external influences**
- **Strives to balance diverse social objectives**

The term “optimum” with respect to the yield from a fishery, means the amount of fish which will provide the greatest benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. *Magnuson-Stevens Fishery Conservation and Management Act of 1996.*

The U.S. ocean and coastal resources should be managed to reflect the relationships among all ecosystem components, including humans and nonhuman species and the environments in which they live. Applying this principle will require defining relevant geographic management areas based on ecosystem, rather than political boundaries. *The U.S. Commission on Ocean Policy 2004*

key concepts and controversies

Requirements for an ecosystem approach to fisheries

The first and primary requirement for an ecosystem approach to fisheries is an understanding of the ecosystem in which fishing is taking place. This need is reflected in the recent recommendations of the federally appointed U.S. Commission on Ocean Policy. Its 2004 report supported a robust fisheries research and science program. In turn, the Bush Administration's recently released Ocean Action Plan supported similar recommendations. Other identified needs included expanded data, risk assessments, collaboration with other federal and state agencies and stakeholders, and improved monitoring and evaluation of fishing impacts.

Regional ecosystem planning

The Commission on Ocean Policy recommended the creation of regional ocean or ecosystem councils. Regional ecosystem councils would develop goals and objectives devised to protect, restore, and maintain, as necessary, the health of the marine ecosystem. NOAA has affirmed the use of regional ecosystem councils in its strategic plan for 2005-2010 as a means to collaborate and coordinate with partners to achieve regional ecosystem objectives.

As recommended, the regional ecosystem councils are not intended to displace existing authorities. Instead, they would optimally provide an opportunity for managers to coordinate regional information and consider the cumulative impacts of all ongoing activities on ecosystem components. To the extent that the goals and objectives for ecosystem approaches affect other agencies, either because fishing has an impact on other managed resources, or other activities impact fishery resources, partnership and coordination would be critical.

As highlighted by the Commission on Ocean Policy, many of the key elements of a regional process are already embodied in the fishery management councils — regional councils based loosely on ecosystem boundaries, the incorporation of science in management plans, an emphasis on local public participation and the inclusion of federal and state representatives.

In 2004, NOAA provided funding to the New England, Mid-Atlantic, South Atlantic, and the Gulf of Mexico Councils for ecosystem management pilot projects. Each council has engaged in activities to identify and develop ecosystem-based management objectives, examine threats, consider alternatives, hold workshops between managers and scientists to determine the technical needs for ecosystem-based management, and develop quantitative models and GIS tools to evaluate management options at the ecosystem level. The South Atlantic Fishery Management Council has nearly completed a comprehensive Fishery Ecosystem Plan.





story ideas

Ecosystem Considerations for Magnuson-Stevens Fishery Conservation and Management Act Reauthorization

Examples of Magnuson-Stevens Act provisions that could strengthen the use of ecosystem-based approaches:

- A mandate to protect, restore, and promote the long-term health and stability of the marine ecosystem as well as fisheries
- A national standard requiring the use of ecosystem-based approaches to fisheries management
- An ecosystem assessment in fishery management plans, including a requirement to assess the effects of a fishery management plan on non-target species and marine habitat
- Specification of habitat considerations for non-managed species
- A requirement for Fishery Ecosystem Plans, or fishery management plan consistency with broader regional ecosystem plans
- Refinement of the mandate to manage for optimum yield to maintain a healthy ecosystem

Marine Zoning and Ecosystem-based Management

The U.S. Commission on Ocean Policy report includes recommendations for the use of marine zoning in developing an ecosystem-based approach to fisheries management. Recently, the North Pacific Fishery Management Council approved the prohibition of bottom trawling in an area larger than the size of Texas off the Alaskan coast to protect cold water corals. How are marine protected areas and other types of special management zones being used in current management plans? How effective have they been? What controversies surround the use of marine zones? How can managers better avoid controversy?

The Multiple Use Dilemma

Fisheries are but one use associated with ecosystems, as society benefits in many ways from other uses and non-uses of marine ecosystems. These include other commercial, cultural, social and non-consumptive uses. What are these other competing uses of the marine ecosystem? What are their economic and social values to the nation? How do and should fisheries policy decisions account for these other sectors?

Current Ecosystem Pilot Projects

In 2004, funding was provided to begin ecosystem-based management pilot projects that involve four regional fishery management councils covering the U.S. east coast and Gulf of Mexico. What approaches are each of the councils taking to develop ecosystem-based management strategies? Is there overlap in these approaches? What new research and science activities are being conducted? What new support tools are being developed to advance ecosystem approaches to management?



information

conference participants ecosystem panel (Chair¹ Presenter² Panelist³)

Dr. Robert Shipp¹

University of South Alabama, Mobile, AL
251-460-6351, rshipp@jaguar1.usouthal.edu

Dr. Steve Murawski²

NOAA Science and Technology, Silver Spring, MD
301-713-2367 (ext.171), Steve.Murawski@noaa.gov

Roger Rufe²

The Ocean Conservancy, Washington, DC
202-429-5609, rrufe@oceanconservancy.org

Dr. Carl Walters³

Mote Marine Laboratory, Florida/UBC Fisheries Centre-Canada
Vancouver, BC
604-822-2731, c.walters@fisheries.ubc.ca

Gregg Waugh²

South Atlantic Fishery Management Council staff, Charleston, SC
843-571-4366, gregg.waugh@safmc.net

Paul Bartram³

Western Pacific Fishery Management Council member
and fisheries consultant, Honolulu, HI
808-330-2964, pbartram@tripleb.com

Ralph Brown³

Pacific Fishery Management Council member
and commercial fisherman, Brookings, OR
541-469-8890, aloma@wave.net

Margaret Davidson³

NOAA/NOS Coastal Services Center, Charleston, SC
843-740-1220, mdavidson@csc.noaa.gov

Jack Dunnigan³

NOAA Fisheries Service, Silver Spring, MD
301-713-2334 (ext.101), jack.dunnigan@noaa.gov

Dr. Ed Houde³

University of Maryland, College Park, MD
410-326-7224, houde@cbl.umces.edu

John Iani³

fisheries consultant, Seattle, WA
206-623-9372, lji@vnf.com

Dr. Barbara Kojis³

Caribbean Fishery Management Council member, St. Thomas, USVI,
340-775-6762, bkojis@vitelcom.net

Dr. Russell S. Nelson³

fisheries consultant, Oakland Park, FL
561-449-9637, DrRSNNC@aol.com

Dr. Doug Rader³

Environmental Defense and South Atlantic Fishery
Management Council Habitat Advisor, Raleigh, NC
919-881-2601, drader@environmentaldefense.org

Russell Sherman³

New England Fishery Management Council Habitat
Advisor and fisherman, Gloucester, MA
508-783-6231, captain@gis.net

For more information about this conference topic

Diana Evans (Staff Assistant)

North Pacific Fishery Management Council, Anchorage, AK
907-271-2809, diana.evans@noaa.gov

Tom Hoff (Rapporteur)

Mid-Atlantic Fishery Management Council
302-674-2331, thoff@mafmc.org



information sources

Ecosystem-based Fishery Management: A Report to Congress by the Ecosystems Principles Advisory Panel.

April 1999.

US DOC, NOAA, NMFS.
http://www.st.nmfs.gov/st7/documents/epap_report.pdf

FAO Technical Guidelines for Responsible Fisheries, Chapter 2.

The ecosystem approach to fisheries.
vol 4 suppl 2. Rome 2003.
<ftp://ftp.fao.org/docrep/fao/005/y4470e/y4470e00.pdf>

Guidelines for Regional Marine Ecosystem Approaches to Management.

October 2004.

http://www.nmfs.noaa.gov/sfa/reg_svcs/Council%20stuff/agendapresentations/GuidelinesforEAM.pdf

US Commission on Ocean Policy 2004. An Ocean Blueprint for the 21st Century

Final Report of the U.S. Commission
on Ocean Policy
Washington, D.C., 2004.

<http://www.oceancommission.gov/>